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107E-5989-JWH  
April 26, 2005

Ms. Demetra Salisbury  
U.S. Environmental Protection Agency  
901 North Fifth Street  
Kansas City, KS 66101



Encl: Interim Action Remedial Excavation Work Plan, Boeing Tract I,  
Mc Donnell Douglas, Hazelwood, MO (2 copies)

Dear Ms. Salisbury;

The enclosed revised work plan is submitted as required by Section XI of the Corrective Action Conditions of the Hazardous Waste Management Facility Permit, Number MOD000818963. The work plan has been revised to address comments received from the Missouri Department of Natural Resources, Hazardous Waste Program.

Please contact me if you need additional information.

Sincerely,

A handwritten signature in black ink that reads "Joe Haake". The signature is written in a cursive, flowing style.

Joseph W. Haake, Group Manager  
Environmental and Hazardous Materials Services  
Dept. 107E, Bldg. 111, Mailcode S111-2491  
(314) 777-9181

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# INTERIM ACTION REMEDIAL EXCAVATION WORK PLAN

Boeing Tract 1  
McDonnell Douglas,  
Hazelwood, Missouri

Prepared for:  
The Boeing Company  
St. Louis, Missouri



April 22, 2005

Prepared by:

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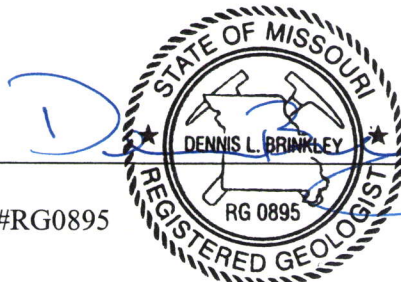
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## GEOLOGIST CERTIFICATION

I, Dennis L. Brinkley, a Missouri Registered Geologist, hereby certify that the attached document was prepared by myself or under my immediate direction.

Dennis L. Brinkley  
Missouri Registered Geologist #RG0895



4/22/05  
Date

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## 1.0 SITE INFORMATION

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) [RFI MACTEC, 2004] has recently been completed at the Boeing Tract 1 facility (Facility) located in Hazelwood, Missouri (Figure 1). Soil borings, temporary piezometers, and groundwater monitoring wells were installed at the Facility as part of the RFI to characterize the nature of any hazardous waste/constituent releases to soil or groundwater. Soil and groundwater samples were collected and selectively analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), polychlorinated byphenols (PCBs) and total metals. These results were compared in the RFI to Investigative Threshold Levels (ITLs). ITLs represent conservative values which incorporate both risk-based action levels and regulatory levels. These ITL values were used to determine the need for further evaluation or to recommend no further investigation.

Following completion of the RFI, an assessment utilizing the RFI and other historical data was prepared using the Missouri Risk-Based Corrective Action process.



## 2.0 INTERIM ACTION

Based on an evaluation of the RFI data in the *Risk-Based Corrective Action Report, Boeing Tract 1* (Risk Assessment & Management (RAM) Group, September 2004), there was an exceedence of acceptable risk for TPH at various locations at the Facility. At four locations (Risk Area 6B, Risk Area 3A, Risk Area 3E, and Risk Area 8B) the size of the impact was limited to single soil borings (Figure 1). These TPH risk exceedence were based on a future exposure pathway of volatilization from groundwater to indoor air. Additionally there was an exceedence of risk for benzo(a)anthracene based on a future exposure pathway of direct contact with groundwater by a construction worker at Risk Area 6B.

As an Interim Action, Boeing will retain a qualified hazardous waste excavation contractor to excavate soil at each of these four areas. Prior to excavation, the soil at each area will be characterized for appropriate disposal at an off-site location. The objective of the Interim Action is to remove impacted soil that could be a source of constituents of concern (COCs), i.e. TPH and SVOCs, to shallow groundwater.

A Corrective Measures Study (CMS) will subsequently be prepared for the Boeing Tract 1 Facility. The results of this Interim Action will be included in the CMS, which will evaluate the effectiveness of the Interim Action and determine if additional remedial activities for soil and groundwater are required for the Areas.

### 2.1 Risk Area 6B

Risk Area 6B includes the Scrap Metal Recycling Dock area (Figure 2) has been used for recycling and accumulating scrap since the Building 27 expansion in 1954. The dock is composed of an elevated ramp and a concrete lined and curbed chip drainage area. Rolloffs containing scrap aluminum, titanium, and other metal shavings and scrap from the manufacturing process are taken to the top of the elevated ramp and loaded into open-top semi-trailers located on the drainage area below. The trailers are inclined to allow the water based coolant (cutting oil before 1990) to drain out of the trailers and into a collection drain. This collection drain is plumbed into an oil/water sump located beneath the elevated area of the dock. The water from the oil/water sump flows into the industrial waste sewer which goes to the Boeing Industrial Wastewater Treatment Plant (IWTP).

TPH and benzo(a)anthracene were detected above ITLs in just one boring (RC2) in Risk Area 6B. This boring was located at the northern end of the Scrap Metal Recycle Dock.

### 2.2 Risk Area 8B

Risk Area 8B includes the Building 220 Trash Compactor located at the northwest corner of Building 220 on Tract 1 North (Figure 3). The trash compactor had a hydraulic oil system that contained less than 30 gallons of hydraulic oil. TPH was detected above the ITL in just one boring location (B220N1) located adjacent to the trash compactor.

### 2.3 Risk Area 3A

Risk Area 3A is located on Boeing Tract 1 South and includes the Building 41 Tank Farm consisting of jet fuel underground storage tanks (USTs) located to the immediate west of Building 41 and underground jet fuel distribution lines that run from the Building 41 Tank Farm to the aircraft fueling area at Fuel Pits 1, 2, 3, and 4 south of Building 42. These underground lines run from the fuel pits between Buildings 45 and 42, to the southeast corner of Building 48. From this point the piping originally ran diagonally through the parking lot north of Building 42, currently the piping runs along the south and east edges of this parking lot.

TPH was detected in groundwater above the ITL in just one boring (B42N5) in Risk Area 3A. This boring was located adjacent to the jet fuel distribution lines north of Building 42 (Figure 4).

### 2.4 Risk Area 3E

Risk Area 3E is located on Boeing Tract 1 South at the east side of Building 2 where a 1,000-gallon diesel UST (B24) is located. Tank B24 was installed in 1942 and removed in 1989. The tank was not replaced. TPH was detected in groundwater above the ITL in just one boring (B2E2) in Risk Area 3E. This boring was located at the former location of UST B24 (Figure 5).

### 2.5 Health and Safety Plan

A site specific health and safety plan (HASP) will be developed by each contractor doing on-site construction or oversight operations in conjunction with the Interim Action. The HASP will address chemical exposure along with construction activity precautions to be conducted.

### 2.6 Waste Characterization

Based on the results of soil and groundwater analysis conducted during the RFI, VOCs and TPH may be present in the soil to be excavated at the four interim action areas. Additionally, SVOCs and PCBs may be present in the soil at the Scrap Metal Recycling Dock Interim Action area. Waste characterization sampling, to allow for the proper characterization of the waste, will be conducted prior to the start of excavation. This will allow for the direct loading and transportation of excavated soil to the appropriate facility. Contingent on the results of waste characterization, it is planned that the excavated soil will be transported and disposed as a special waste at the Fred Weber Sanitary Landfill in Maryland Heights, Missouri.

Waste characterization sampling will be conducted using a hydraulic soil probing machine to advance a soil boring at the location of borings RC2 (Scrap Metal Recycling Dock), B220N1 (Building 220 Trash Compactor), B42N5 (Risk Area 3A), and B2E2 (Risk Area 3E). The sample from Scrap Metal Recycling Dock with the highest photoionization detector (PID) reading will be submitted for waste characterization laboratory analysis. The soil samples from each of the other three areas with the highest PID reading will be composited and submitted for waste characterization laboratory analysis.



Waste characterization will consist of the following laboratory analysis.

- Flash Point – Closed Cup
- Paint Filter test
- TCLP – Metals
- TCLP – Semi Volatiles
- PCB

## 2.7 Groundwater Monitoring Piezometer Installation

Three groundwater monitoring piezometers will be installed at each of the four areas to establish the effectiveness of the soil excavation. Two piezometers will be installed approximately 10 to 15 feet from the excavation area in the down gradient direction (east, southeast) with the goal of refining the delineation of the extent of impacted groundwater. These piezometers will be installed at the same time as the soil samples are collected for waste characterization and will be developed and sampled prior to implementation of the remedial action (see Section 2.8.6 for methodology). The results of the initial groundwater sampling results will be reviewed, prior to implementation of the rest of the proposed Interim Action, to determine if the proposed excavations will likely result in the desired reductions in COC concentrations in groundwater. A third piezometer will be installed within the center of each excavation during backfilling procedures (Figures 2, 3, and 4).

Soil borings for piezometer installation will be conducted using a hydraulic soil probing machine. The piezometers will be installed to a depth of 12 feet below ground surface (bgs) and will be constructed of one-inch polyvinylchloride (PVC) with 10 feet of slotted well screen and solid PVC riser pipe to a flush mounted well box set in concrete.

## 2.8 Remedial Excavation

The area of excavation for Risk Area 6B (Scrap Metal Recycling Dock) will be approximately 15 feet long (east-west) by 15 feet wide (north-south). The areas of excavation for Area 8B (Building 220 Trash Compactor) and Area 3A will be approximately 10 feet long (east-west) by 10 feet wide (north-south). The area of excavation for Area 3E will be approximately 15 feet long (east-west) by 10 feet wide (north-south).

The excavations will be extended to a depth of up to 10 feet bgs as conditions allow (slope stability, groundwater inflow, etc.).

### 2.8.1 Site Preparation

Site preparation will consist of the following items:

- Locate previous sampling points and establish boundaries of remedial excavation;
- Location of underground utilities in the vicinity of the proposed excavation;

- Breaking and removal of concrete and asphalt covering the excavation area with a tracked excavator;
- Disposal of the concrete and asphalt as construction debris.

### **2.8.2 Source Area Removal and Sampling**

The soil within the planned excavation will be removed using a tracked excavator and loaded directly into trucks for transportation to the appropriate disposal facility. A Missouri Registered Geologist will oversee the excavation and will monitor the removed soil by conducting headspace readings with a PID. Excavation will continue until field screening indicates that COC impact to the soil has been removed or the pre-determined size of the excavation has been reached. One soil sample will be collected by the geologist from each sidewall and the floor of each excavation (five soil samples total per excavation). Soil samples will be collected from the area with greatest indication of COC impact via field screening (PID, visual, and/or olfactory). Soil samples will be collected from undisturbed portions of soil using the backhoe bucket and placed directly into laboratory supplied jars, labeled, and placed on ice for shipment under chain-of-custody to the analytical laboratory. Soil samples will be analyzed for VOCs and TPH-Gasoline Range Organics (GRO) by Environmental Protection Agency (EPA) Method 8260B along with TPH-Diesel Range Organics (DRO) and TPH- Oil Range Organic (ORO) by EPA Method 8270C. Soil samples collected from the excavation at the Scrap Metal Recycling Dock will additionally be analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270C. Soil sampling will be conducted in accordance with the RFI Work Plan and Quality Assurance Project Plan (QAPP).

### **2.8.3 Dewatering**

Dewatering of the excavation will be conducted as needed utilizing trash pumps to pump water collected in the excavation into an aboveground tank placed near the excavation. The water within the tank will be tested and a disposal plan developed for the water based on those results. Following disposal of the water, sediment will be removed from the tanks, tested and properly disposed.

### **2.8.4 Backfill**

The remedial excavation will be backfilled with a clean clay soil, free of organic material and of such moisture content as to be readily compactable. The backfill will be placed in 8-inch lifts and compacted to approximately 90 percent Modified Proctor. Six inches of 3/8-inch minus crushed limestone rock will be placed and compacted on the backfill and the surface will be replaced to match existing.

### **2.8.5 Existing Monitoring Wells and Piezometers**

Existing piezometers and monitoring wells outside the area of excavation will be protected from damage during the interim action; soil will not be stockpiled on/above any existing piezometers and wells.

### **2.8.6 Post Interim Action Monitoring**

Approximately one week following completion of excavation, groundwater samples will be collected from the 12 proposed piezometers. Groundwater samples will also be collected from these piezometers three and six months following completion of the remedial excavation. Groundwater samples will be

analyzed for VOCs and TPH-GRO by EPA Method 8260B and TPH-DRO, TPH-ORO by EPA Method 8270C. Groundwater samples collected from the piezometers at the Scrap Metal Recycling Dock will additionally be analyzed for PAHs by EPA Method 8270C. Groundwater sampling will be conducted in accordance with the RFI Work Plan and QAPP.



### 3.0 REPORTING

Following completion of the Interim Action and post interim action groundwater sampling, a report will be completed that documents the remedial excavation, including a summary of site activities, laboratory analysis, and waste disposal. Copies of the laboratory reports and chain-of-custody forms, along with waste disposal manifests will also be included in the Interim Action Completion Report.

#### 4.0 REFERENCES

MACTEC Engineering and Consulting, Inc. (MACTEC). 2004. Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report for McDonnell Douglas Hazelwood, Missouri. December.

Risk Assessment & Management (RAM) Group. 2004. Risk-Based Corrective Action Report, Boeing Tract 1. September.

United States Environmental Protection Agency (US EPA). 2004. EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Third Edition and Draft Updates.

## FIGURES



Figure 1  
Site Location Map,  
Interim Action  
Remedial Excavation,  
Boeing Tract 1,  
Hazelwood, Missouri

Legend

- ⊗ Abandoned Shallow Piezometer
- ⊗ Abandoned Shallow Well
- ⊙ Deep Piezometer
- ⊙ Deep Well
- ⊙ Intermediate Well
- △ Other Shallow Boring
- △ RFA Boring
- △ RCRA Closure Shallow Boring
- △ RFI Deep Boring/Temp. Piezometer
- △ RFI Shallow Boring
- △ RFI Shallow Boring/Temp. Piezometer
- ⊙ Shallow Piezometer
- ⊙ Shallow Well
- UST Closure Sample

- Other Area
- UST
- SWMU

Scale

1:4,800  
1" = 40'

Drawn by: BSM Approved by: DLS  
Checked by: JMS Date: January 24, 2005

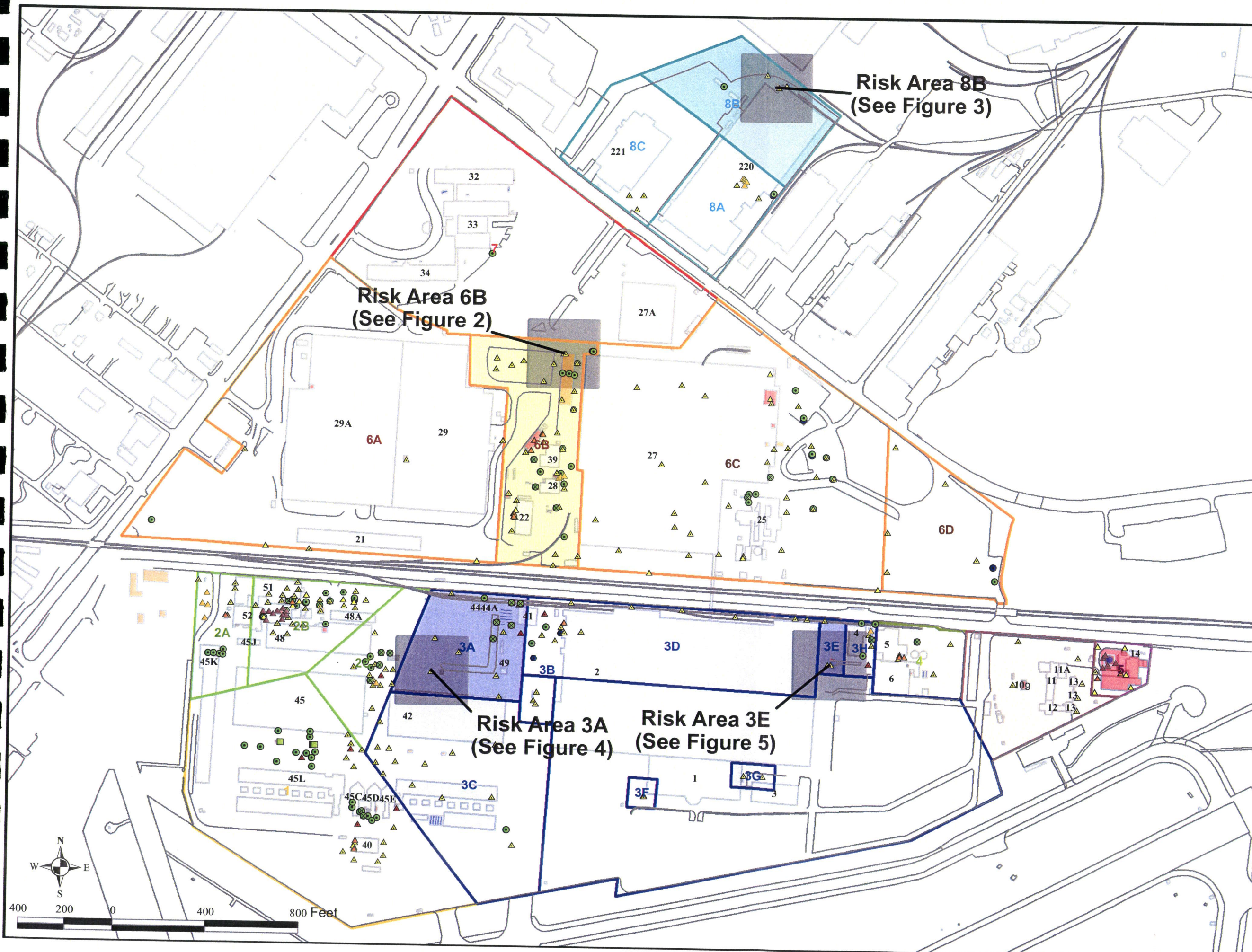






Figure 2  
Interim Action  
Remedial Excavation,  
Risk Area 6B  
Scrap Metal Recycling Dock  
Boeing Tract 1,  
Hazelwood, Missouri

### Legend

- Proposed Shallow Piezometer
- Proposed Interim Action Excavation
- Shallow Well
- Deep Well
- RFI Shallow Boring/ Temp. Piezometer
- Industrial Sewer Intake
- Industrial Sewer Manhole
- Water Line
- Industrial Sewer Line

### Scale

1:480

1" = 40'

Drawn by: BSM Approved by: *DLB*  
Checked by: *LLB* Date: January 24, 2005




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Figure 3  
Interim Action  
Remedial Excavation,  
Risk Area 8B  
Bldg 220 Trash Compactor  
Boeing Tract 1,  
Hazelwood, Missouri



#### Legend

-  Proposed Shallow Piezometer
-  Proposed Interim Action Excavation
-  RFI Shallow Boring/Temp. Piezometer

#### Scale

1:480

1" = 40'

Drawn by: BSM Approved by:   
Checked by:  Date: January 24, 2005

 **MACTEC**



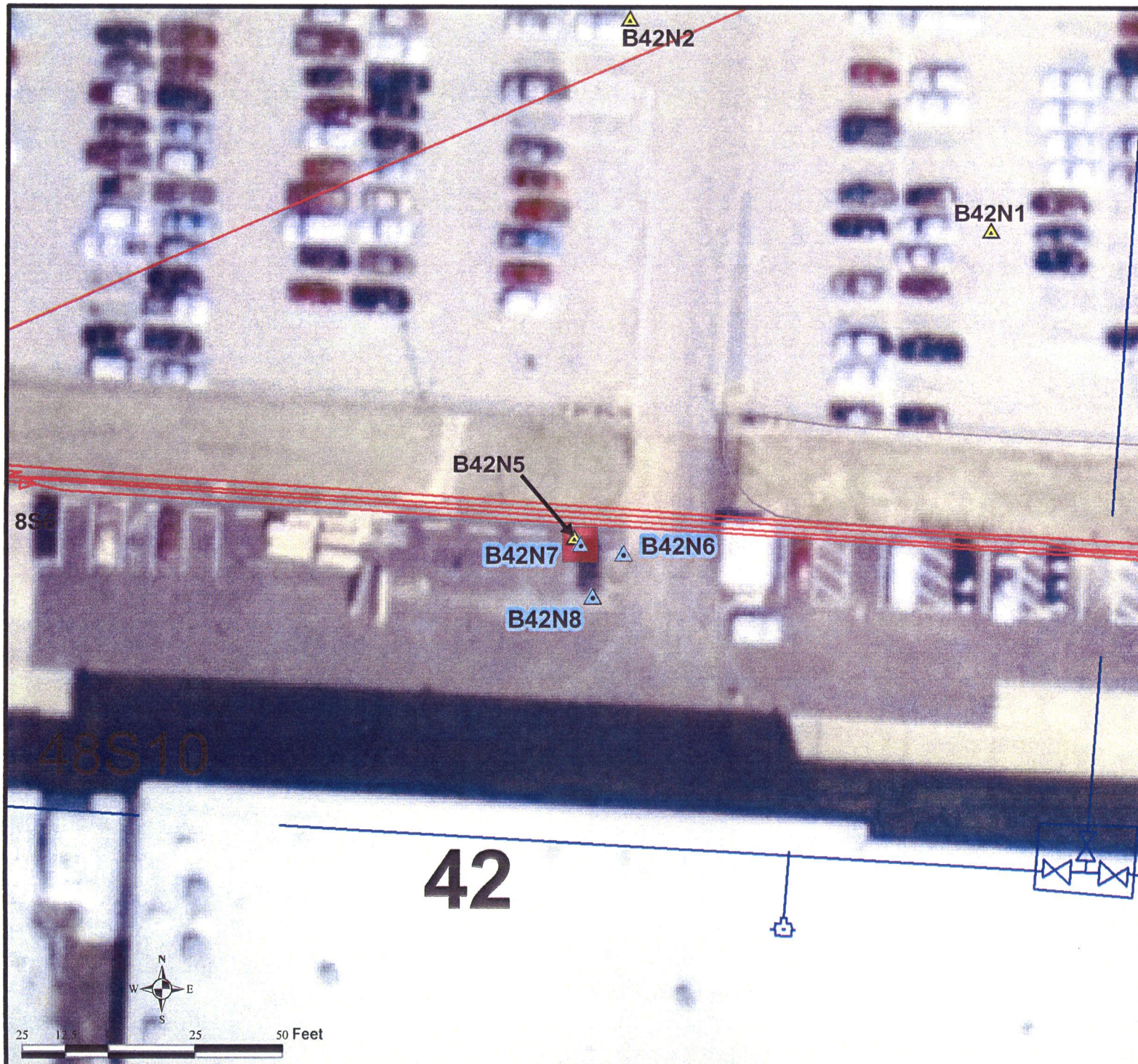


Figure 4  
Interim Action  
Remedial Excavation,  
Risk Area 3A  
Boeing Tract 1 South,  
Hazelwood, Missouri

#### Legend

- Proposed Shallow Piezometer
- Proposed Interim Action Excavation
- RFI Shallow Boring/Temp. Piezometer
- Water Line
- Jet Fuel Line

#### Scale

1:480  
1" = 40'

Drawn by: BSM Approved by: *D.B.*  
Checked by: *JMS* Date: January 20, 2005

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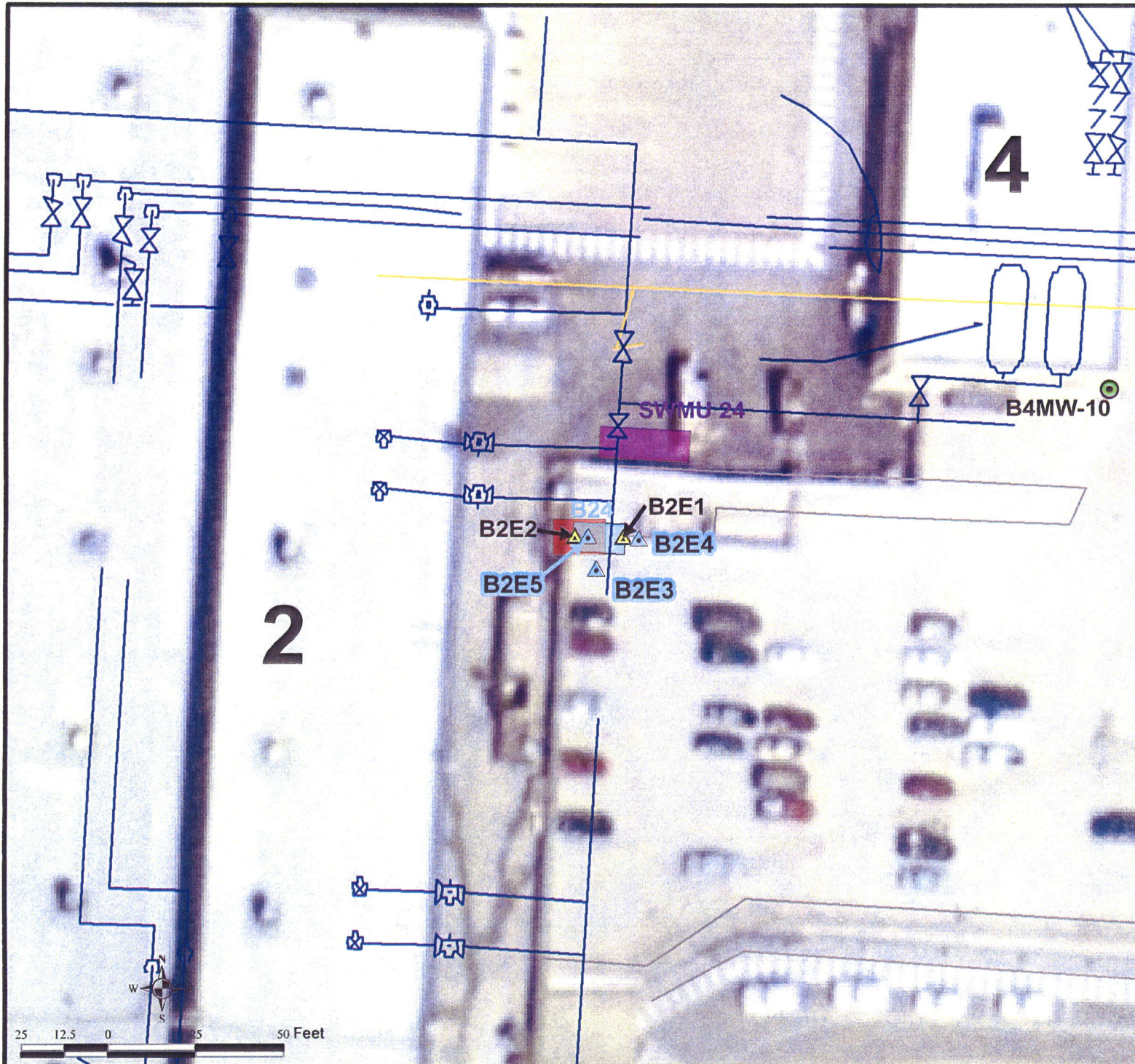


Figure 5  
Interim Action  
Remedial Excavation,  
Risk Area 3E  
Boeing Tract 1 South,  
Hazelwood, Missouri

#### Legend

- Proposed Shallow Piezometer
- Proposed Interim Action Excavation
- SWMU
- UST Location
- Shallow Well
- RFI Shallow Boring/Temp. Piezometer
- Water Line
- Natural Gas Line

#### Scale

1:480  
1" = 40'

Drawn by: BSM Approved by: *DJS*  
Checked by: *LWS* Date: January 24, 2005

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